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AUTHOR Kurth, Paula K.; Grossman, Gary M.
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ABSTRACT

A Pennsylvania study analyzed the capability of the existing systems to deliver a comprehensive, articulated program of vocational education. A review of prior studies of vocational education in Pennsylvania found consensus about needed changes in the state's program. Areas of improvement included governance and administration; leadership; research, planning, evaluation, and professional development; program development; and curriculum. Study activities included a description of the current vocational education program in Pennsylvania, identification of problems in the program, identification of promising elements of vocational education in other states, use of a policy Delphi to assist in identifying and prioritizing alternative strategies, analysis of study findings, and development of recommendations. Sixteen study recommendations dealt with the five issues identified in the literature. They included regional governance; a commissioner of vocational-technical education; state board of education advocacy for vocational-technical education; a clear statement of purpose of vocational-technical education; business/industry/labor relationships; public information campaign; enhanced research capacity; enhanced teacher professionalism; accreditation of area vocational-technical schools; compatible databases; technical institutes; vocational-technical education in grades 8, 9, and 10; vocational-technical education in grades 11 and 12; interdisciplinary curriculum; and student educational development plans. (34 references) (YLB)

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Vocational-Technical Education

Volume I: Narrative

Final Report

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The Center fulfills its mission by conducting applied research, evaluation, and policy analyses and providing leadership development, technical assistance, curriculum development, and information services pertaining to:

- impact of changing technology in the workplace and on the delivery of education and training
- quality and outcomes of education and training for employment
- quality and nature of partnerships with education, business, industry, and labor
- opportunity for disadvantaged and special populations to succeed in education, training, and work environments
- short- and long-range planning for education and training agencies
- approaches to enhancing economic development and job creation

The Pennsylvania Report:

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Volume I: Narrative

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Paula K. Kurth

and

Gary M. Grossman

Center on Education and Training for Employment
The Ohio State University
1900 Kenny Road
Columbus, Ohio 43210-1090

August 1989

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For further information contact:

Program Information Office
Center on Education and Training for Employment
The Ohio State University
1900 Kenny Road
Columbus, Ohio 43210-1090

Call toll free 800-848-4815 or 614-292-4353

FAX: 614-292-1260

TELEX: 9102505950

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FOREWORD

Education in America is changing. All aspects of what were once considered matters of course are increasingly under scrutiny. Education faces challenges in terms of its purposes, its execution of those purposes, and the populations for which it is intended. Responding to change is never easy, particularly with a social institution as embedded in the fabric of a nation's life as is education. Yet, challenges must be addressed and the needs of the entire population must be met if the nation is to retain its standing in an increasingly competitive world.

Challenges are confronting vocational-technical education at least as much as they are other areas. Transformations in technology, in the nature of work, and in the longevity of individual careers are upsetting the "business as usual" that has become so comfortable for some. Disconcerting or not, it can only be ignored at the risk of its obsolescence as an educational modality. Indeed, as Isaac Goldberg stated, "to blind oneself to change is not to halt it." Change will occur whether we embrace it or resist it, plan for it or fail to recognize it. Only our freedom is at risk by a lack of courage in response.

This study was initiated by the desire to respond effectively to the Pennsylvania of the future. In this effort, the Center on Education and Training for Employment conducted a very comprehensive and rather difficult study in attempting to respond to the Commonwealth's stated need. Dr. Floyd McKinney served as Project Director for the initial version of the report and was assisted by Dr. Sally Sutter, an educational consultant. Dr. McKinney and Dr. Sutter conceptualized and carried out the data collection and instrumentation of the study, drafting the initial set of recommendations to which the educational leadership in Pennsylvania responded. We express appreciation to each of them for their work. Ms. Paula K. Kurth provided data collection and writing assistance during this phase of the study.

The second stage of the study which included some of the feedback received was completed by Dr. Gary M. Grossman and Ms. Paula K. Kurth. Dr. Grossman and Ms. Kurth made modifications in the recommendations and organized the presentation of the data in the study for inclusion in the final report. In this respect, I would like to take this opportunity to acknowledge the service and dedication of each of them for their attention to task in a difficult process.

A number of individuals in Pennsylvania also deserve note, particularly those individuals who shared of their time and expertise in responding to our need for information in preparing the report. We would like to thank Ms. Jacqueline Cullen, State Director of the Pennsylvania Bureau of Vocational and Adult Education; Dr. Thomas Winters and Dr. Clarence Dittenhafer of the Research, Management and Data Analysis Section of the Bureau; and Mr. Robert Feir, Executive Director of the Pennsylvania State Board of Education for their feedback and support throughout the course of this study. In addition, the important contributions of the State Board of Education Task Force is greatfully acknowledged.

Finally, I wish to express great appreciation for the work of Ms. Monyeene Elliott, one of the few elements consistently contributing to the success of the study. Ms. Elliott exhibited her usual remarkable degree of patience, most refreshing during the course of this project. Her skills were never more put to the test than they were in this study.

Change involves risk and the prospect that not everyone will regard recommendations in the same light. This is inevitable. Not everyone will "like" this report, as it cannot meet everyone's special interests. However, I am very proud of the staff of the Center in delivering a final report of integrity and, most importantly, of considerable value to the people of Pennsylvania.

Ray D. Ryan
Executive Director
Center on Education and
Training for Employment

PREFACE

This report is developed as two documents. The first is Volume I, subtitled "Narrative" and includes the presentation of the logic and basic thrust of the report. It concludes with a set of sixteen recommendations for consideration by the educational leadership of Pennsylvania. The additional doucment, Volume II, provides additional documentation for the report and recommendations and contains the instrumentation participant lists and all other supporting documentation.

EXECUTIVE SUMMARY

Study Overview

In the 1980s, several major forces converged to cause many states to reexamine the mission of their vocational education systems and to assess how these systems should be structured, governed, and administered to develop the skills needed to ensure productivity and competence in the work force. Among these forces are such trends as--

- decreased numbers of secondary students;
- increased international competition;
- increasingly higher levels of technology that require higher levels of competence in English, mathematics, and science; and
- increased need for retraining of adults.

The State Board of Education in Pennsylvania, recognizing the implications for education of these forces, expressed concern about the current state of vocational education in the Commonwealth, citing ". . . unclear delivery patterns, overlapping functions, underserved areas of need, underused facilities, and unclear responsibilities" (Pennsylvania Department of Education, 1988, p. iii). The Education and Job Training Task Force of the Economics Development Partnership, Office of the Governor, also recommended that the current system of vocational education in the Commonwealth be assessed and recommendations made regarding the organization, curriculum, governance, and funding of vocational education, as well as the ". . . linkages between vocational

programs and job placement" (Pennsylvania Department of Education, 1988, p. iii).

The study objectives, as stated in the contract, were as follows:

1. To analyze the capability of the existing systems to deliver a comprehensive, articulated program of vocational education to all clients in the Commonwealth of Pennsylvania

2. To identify the problems that now exist within the current delivery system of vocational education in the Commonwealth of Pennsylvania

3. To recommend a system or alternative system(s) to improve the delivery of comprehensive, articulated vocational education in the Commonwealth of Pennsylvania

The study objectives were achieved through a series of tasks and activities, including a review of prior studies of vocational education in Pennsylvania, the preparation of a description of the current vocational education program in Pennsylvania, the identification of problems in the Pennsylvania vocational education program, the identification of promising elements of vocational education systems in other states, the use of a Policy Delphi to assist in identifying and prioritizing alternative strategies, the analysis of study findings, and the development of recommendations. In addition, monthly in-person presentations were made to the State Board Project Task Force by the project director.

Study Recommendations

The study recommendations deal with issues of governance and administration; leadership; research, planning, evaluation, and professional development; program development; and curriculum. Briefly, the recommendations are as follows.

Governance and Administration

Efficient and effective governance and administrative structures are essential for optimal delivery of vocational-technical education programs. In Pennsylvania, a myriad of state, regional, and local public and private institutions and agencies with varying governance and administrative structures are involved in providing vocational-technical education programs, services, and activities. This situation has resulted in blurred roles, inadequate program coordination and articulation, missed opportunities, and unserved clients.

- Recommendation 1: Regional governance. The Commonwealth should establish a regional administrative structure for vocational-technical education. The regional structure should encompass all planning and evaluation functions essential to delivering comprehensive and articulated vocational-technical education programs, services, and activities.

The need to reduce duplication of services, increase secondary-postsecondary articulation, provide knowledgeable vocational-technical education leadership, and eliminate problems attendant to the current structure prompts this recommendation.

- Recommendation 2: Commissioner of Vocational-Technical Education. The position of chief administrator for vocational-technical education in the Pennsylvania Department of Education should be designated as Commissioner of Vocational-Technical Education.

The reality that vocational-technical education is not only part of basic education but, rather, crosses into higher education as well as into the Department of Industry and Labor prompts this recommendation.

- Recommendation 3: Regional office restructuring. The functions of the three regional vocational-technical education offices (West, Central, and East) should be refocused to more effectively serve the needs of Pennsylvania's regional educational system.

The regional office can be used to greater advantage than they currently are being used. Functions that would capitalize on their field-based location and ability to link with the Teacher Education Centers should be implemented.

Leadership

Educational leaders have the major responsibility of developing and conveying clear and strong signals about what vocational-technical education is and what it should become. A number of innovations have been accomplished in Pennsylvania. However, in preparing for the future, a more aggressive leadership posture for vocational-technical education on the part of state and local boards of education, the State Department of Education, and local education leaders is necessary to guide Pennsylvania through the rapid technological, economic, and social changes that lie ahead, waiting to snare the unprepared. Study staff offer these recommendations regarding leadership:

- Recommendation 4: State Board advocacy for vocational-technical education. The State Board of Education should assume an active leadership posture and convey a positive commitment in regard to the importance of vocational-technical education.

The unique position of the State Board of Education to positively influence the attitudes and opinions of Pennsylvanians as well as interact with other official bodies that can influence the

delivery of vocational-technical education prompts this recommendation.

- Recommendation 5: Purpose of vocational-technical education. The State Department of Education should develop and communicate a clear statement of purpose for vocational-technical education and embark upon the development of a long-range plan to guide it.

In order that vocational-technical education be supported by Pennsylvanians, they must have a clear understanding of the total contributions vocational-technical education can make to an individual's education as well as the well-being of the Commonwealth. The wise use of facilities and equipment is necessary to make optimal use of resources.

- Recommendation 6: Business/industry/labor relationships. Beyond planning and advisory emphases, the Pennsylvania Department of Education should actively promote the establishment of strong relationships between vocational-technical education and business, industry, and labor.

Although Pennsylvania's educators and employers generally recognize the importance of strong relationships between vocational-technical education and employers, many do not understand the hows and whys of such liaisons.

- Recommendation 7: Public information. The State Department of Education should develop a statewide public information campaign to inform all segments of the population about the linkages between effective vocational-technical education programs and the overall success of the Commonwealth's economic development initiatives.

Many public and private sectors in Pennsylvania are not aware of the positive contributions of vocational-technical education, thus prompting this recommendation.

Research, Planning, Evaluation, and Professional Development

Research, planning, evaluation, and professional development are functions critical to the long-range survival of vocational-technical education. These functions are essential to the maintenance of program relevance, the determination of long-range policies, the evaluation of program worth, and the preparation and upgrading of professional personnel. Current Pennsylvania efforts regarding these functions are not sufficiently coordinated, focused, or funded.

- o Recommendation 8: Enhanced research capacity. The Pennsylvania Department of Education should systematically enhance the conduct of research and development activities, including leadership development, through the stable funding of such through the existing university-level Teacher Education Centers.

The need for coordinated research, planning, evaluation, dissemination, curriculum development, and professional development in Pennsylvania prompts this recommendation.

- o Recommendation 9: Enhance teacher professionalism. All vocational education instructors at the secondary level deserve to have significant professional inservice opportunities available and should be encouraged to obtain an appropriate baccalaureate degree. Of no lesser importance is the need to provide teachers in academic areas with opportunities to develop in areas having occupational relevancy.

The ever-increasing need for instructors to develop students' higher-order thinking, problem-solving, and communication skills prompts this recommendation for more broadly prepared instructors.

- o Recommendation 10: Accreditation of AVTSs. All area vocational-technical schools should be accredited by an accrediting agency officially recognized by the U.S. Department of Education.

The need for recognition of vocational-technical education as a bona fide part of the educational process prompts this recommendation.

- o Recommendation 11: Compatible database. The Commissioner of Vocational-Technical Education should cooperate with other Pennsylvania state departments and agencies to create a compatible database for up-to-date labor market, job availability, and related information to be used by all.

The importance of coordinating labor market data prompts this recommendation.

Program Development

The Commonwealth of Pennsylvania has extensive vocational-technical education offerings at the secondary level. In some geographical areas of the Commonwealth, postsecondary and adult-level offerings are minimal.

- o Recommendation 12: Technical institutes. In those parts of the state not currently served by community colleges or branch campuses, area vocational-technical schools (AVTSs) should be eligible for designation as technical institutes.

The need for equitable funding of as well as access to public-supported postsecondary vocational-technical education training and retraining in a manner that will not duplicate currently accessible programs prompts this recommendation.

Curriculum

Curriculum provides the building blocks by which learners acquire the competencies needed to achieve their career goals. The curriculum must be built on a strong research base and coordinated at all levels so that learners can progress from one level

to another without wasting time and money. The curriculum must reflect the fact that workers now compete in an international economy that is, at one end, heavily service oriented while, at the other end, is very technologically advanced.

- Recommendation 13: Vocational-technical education in grades 8, 9, and 10. Students should receive instruction in systems of technology, human relations and decision-making, and career selection and development in grades 8, 9, and 10, respectively.

The need for students to make informed choices regarding education and careers and to develop the ability to make those decisions as well as understand the world around them prompts this recommendation.

- Recommendation 14: Vocational-technical education in grades 11 and 12. Grades 11 and 12 should provide students the opportunity to develop specific skills in a cluster or area within a cluster. Attainment of competencies rather than the number of hours of instruction per se should be the criteria used to determine completion of a program.

The need of students to develop skills at their own pace prompts this recommendation.

- Recommendation 15: Interdisciplinary curriculum. An interdisciplinary curriculum should be implemented that encourages the integration of academic education and vocational-technical education.

The need for mutual reinforcement of knowledge and skills prompts this recommendation.

- Recommendation 16: Student educational development plan. Guidance counselors in all school districts should, with the participation of each student and parent(s) or legal guardian(s), construct and implement an educational development plan, beginning no later than grade 8, with a yearly review and update, including the opportunity for major alterations after the student has completed the career selection and development course.

The need for a carefully thought-out plan to enable every student to reach his/her goals prompts this recommendation.

Summary

The recommendations presented above are intended to address the identified needs of vocational-technical education in Pennsylvania. The recommendations are presented in greater detail, along with the supporting evidence, in the "Recommendations and Rationales for Improving Vocational-Technical Education in Pennsylvania," which appears later in this report. It is hoped that the reader will reserve judgment on individual recommendations until after reading this chapter.

INTRODUCTION

Need for the Study

During the 1980s, several major forces converged to cause many states, including Pennsylvania, to reexamine the mission of their vocational-technical education programs and to assess how these programs should be governed, structured, and delivered to ensure productivity and competitiveness in the work force. Within the educational system generally, a number of important trends are notable. First, the number of students in secondary-level institutions has decreased (down 20.7 percent over the past 6 years), but proportionately more students come from "special needs" (e.g., disabled, disadvantaged, limited English proficiency, etc.) backgrounds. Further, increased international competition has led to calls for an American work force that is more highly skilled and efficient coupled with the demand that education provide such workers. Finally, an "educational reform" movement has developed, expressed most substantively as increased graduation requirements in English, mathematics, and the sciences (Pennsylvania State Board of Education, 1984). The position of vocational-technical education in this "reform" has varied with the ideology of the partisan giving voice to it.

Whereas none of these issues have been viewed as the exclusive province or responsibility of vocational-technical education, they have had an enormous impact nonetheless. Questions regarding the role and purpose of vocational-technical curricula have surged to the forefront of the educational agenda. To what degree can

vocational-technical education respond to the challenges of the work force of the future? How much can it contribute to necessary basic skills preparation of youth and adults? How can the work force demands of higher technologies be integrated into traditional curricula and at what level? Should vocational-technical education be eliminated, as some critics suggest, in favor of a far greater institutional emphasis on academic subjects? These and other questions are confronting leaders and policymakers nationwide and demand a considered response. They receive particular attention at the state level, the source of the greatest portion of funding and the point at which policy will have its greatest impact in local schools and colleges.

Although these issues themselves are important, the factor driving them to a crisis level is the rapid rate of technological change. The nature and degree of change in this respect is predicted to be greater over the next 10-20 years than it has been in all previous history (Pennsylvania Department of Education, 1984). Jobs are eliminated or modified at an unprecedented rate, a trend that will increase greatly in just few years. This has understandably increased the level of anxiety among educators, business leaders, and policymakers about many things relative to education, the competencies that workers will need in the future, and the degree to which schools and colleges can meet this need among them.

Pennsylvania is a state that has been dramatically impacted by the shifting occupational structure. It has recently endured fundamental industrial change and worker dislocation. On the

other hand, Pennsylvania has also been effective in the development of new industry through visionary leadership in education, business, and government at the state and local levels. It is therefore appropriate to examine the contribution of vocational-technical education in the state, historically and at present, and the role it has played. More important, such an analysis can provide a basis with which to assist the people of Pennsylvania in creating a future, empowering them to participate for their benefit and that of the Commonwealth.

This report examines vocational-technical education in Pennsylvania from a broader perspective than one usually sees. It recognizes that a vocational-technical curriculum in a school and a policy in a state must respond to a variety of new realities. It must begin with an understanding of the roots of vocational-technical education in Pennsylvania. It must take into account social and demographic trends in the population of the Commonwealth. Further, it must respond to the emergent technologies changing the face of Pennsylvania industry as well as the capacity of the educational system to meet these challenges. The following narrative addresses these issues in detail as a basis for recommendations for the future of vocational-technical education in Pennsylvania.

Vocational-Technical Education in Pennsylvania

Pennsylvania has been a leader in the conceptualization, design, and delivery of vocational-technical education for many years. Its history of leadership, innovation, and responsiveness

to the state's changing population and economy is evidence of the philosophical foundations on which the Commonwealth's vocational-technical education system was built (Jones, 1976). One important principle of the Pennsylvania system has been local control, and over the years, greater autonomy for education policy and decision making has been given to and accepted by the local communities of the Commonwealth as compared to other states. Much of the ability to relate occupational skills to local or regional economics has come, therefore, as a result of strong local leadership. Through local and regional collaborative efforts, vocational-technical education programs have successfully prepared citizens for a variety of jobs in the Commonwealth's economy. This has ensured the continuing importance and value of vocational-technical training as part of the educational mosaic of the state.

In recent years, a number of agencies and organizations have examined vocational-technical education in Pennsylvania from their individual perspectives, interests, and perceived needs. Besides the Pennsylvania Department of Education's traditional leadership role, a number of groups have conducted studies or issued statements about the quality or deficiencies of the state's vocational-technical education program. These groups have expressed concerns about areas such as education and training, Pennsylvania's future economic growth, teacher preparation, industry's position regarding the improvement of vocational education, concerns of the state legislature, various approaches in postsecondary education, and other factors. They have put forward a variety of points of view regarding needed improvements and appropriate methods for changing

the vocational-technical education system in Pennsylvania. Taken together, these perspectives form a foundation with which to assess the need for improving the delivery of vocational-technical education in the state. Figure 1 constructs a matrix with which to assist in this examination, the content of the reports and their contribution to the discussion about vocational-technical education in Pennsylvania.

The relationships presented in figure 1 identify specific issues made in the context of reports by groups concerned with vocational-technical education. These reports, as the figure shows, exhibit a high degree of consensus about what are perceived to be needed changes in the program of the Commonwealth. The statewide consensus on the issues can be summarized as containing elements of the following areas of improvement.

Governance and Administration

A number of studies have proposed alterations in the manner in which vocational-technical education in the state is governed. The groups obviously believed that program effectiveness and efficiency could be enhanced by modifications in administration. Among the items proposed, all of which come from several sources, is a concern for restructuring the system to--

- clarify leadership, policy direction, and program viability;
- provide better student access;
- improve secondary and postsecondary and local/regional/state articulation;
- enhance visibility of vocational-technical education;

Figure 1. A matrix of issues concerning vocational/technical education program improvement.

Issues Commonly Discussed Regarding Future Improvement	Reporting Group and Agency											
	JAC	SCVE	VAP	OG	PVA	BRAPVE	PCVE	BVAE	SBE	DOL & I	RCU	PI
1. Restructure program to provide greater leadership, policy direction and articulation with business community	✓		✓	✓	✓		✓		✓		✓	✓
2. Increase and improve professional development of vocational educators		✓	✓	✓		✓	✓	✓	✓			✓
3. Examine the creation of technical institutes–using existing educational institutions	✓		✓	✓	✓	✓			✓			✓
4. Replicate business sponsored curriculum in state's schools		✓		✓		✓	✓	✓	✓	✓		
5. Increase curriculum that provides a range/cluster of occupational entry-level skills		✓	✓	✓		✓	✓	✓	✓	✓		✓
6. Increase dropout prevention programs within vocational education		✓		✓	✓	✓	✓	✓	✓			✓
7. Increase and improve comprehensive career guidance and counseling program delivery			✓	✓		✓		✓		✓		✓
8. Integrate job preparedness, counseling and guidance into total education curriculum			✓	✓		✓		✓		✓		✓
9. Utilize community leaders in guidance programs		✓	✓	✓		✓	✓	✓		✓		✓
10. Improve work readiness testing for high school students			✓	✓		✓		✓	✓	✓		✓
11. Utilize the summer period for employment and employability approaches		✓		✓				✓		✓		

Code:

JAC–Joint Action Committee
SCVE–State Council for Vocational Education
VAP–Vocational Administrators of Pennsylvania
OG–Office of the Govenor
PVA–Pennsylvania Vocational Association
BRAPVE–Blue Ribbon Advisory Panel for Vocational Education
PCVE–Perkins Committee for Vocational Education
BVAE–Bureau of Vocational & Adult Education
SBE–State Board of Education
DOL & I–Department of Labor and Industry
RCU–Research Coordinating Committee
PI–Project/Staff Inverviews in Pennsylvania

Figure 1, continued

Issues Commonly Discussed Regarding Future Improvement	Reporting Group and Agency											
	JAC	SCVE	VAP	OG	PVA	BRAPVE	PCVE	BVAE	SBE	DOL & I	RCU	PI
12. Increase state's schools to work transition programs		✓	✓	✓				✓		✓		✓
13. Encourage more peer shadowing and mentoring programs (teachers/ counselors/students)		✓		✓				✓	✓	✓		
14. Increase legislative and financial support		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
15. Improve student/adult access	✓	✓	✓		✓	✓		✓	✓			✓
16. All AVTS and post secondary institutions should be accredited			✓		✓	✓						
17. Examine reasons for underutilization of AVTS		✓	✓	✓				✓	✓		✓	✓
18. Increase flexibility of program (customized design and short term training)		✓	✓				✓	✓				✓
19. Increase quick response capability to changing work force needs			✓				✓			✓		✓
20. Reexamination of school codes that limit vocational education program improvement and expansion			✓		✓	✓	✓				✓	✓
21. Examine governance structures			✓				✓		✓		✓	✓
22. Increase state's adoption and implementation of competency based instruction (teachers and administrators)		✓	✓					✓	✓			✓
23. Increase state wide, regional, and local planning	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
24. Status of vocational education as major course of study			✓		✓			✓	✓			✓
25. Increase image of vocational education	✓	✓	✓		✓	✓		✓	✓			✓
26. Evaluation of the total program for student and workplace effects	✓	✓	✓		✓		✓	✓		✓	✓	✓
27. Expand and improve state staff leadership			✓		✓				✓			

Figure 1, continued

Issues Commonly Discussed Regarding Future Improvement	Reporting Group and Agency											
	JAC	SCVE	VAP	OG	PVA	BRAPVE	PCVE	BVAE	SBE	DOL & I	RCU	PI
28. Increase articulation–secondary/post secondary and employment and training		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
29. Increase state field staff/technical assistance		✓			✓			✓		✓		✓
30. Expand programs and access support for adults					✓			✓	✓	✓	✓	
31. Expand exemplary project approach to program improvement		✓				✓		✓				✓
32. Expand programs for prison inmates		✓										
33. Expand and improve use of advisory and technical committees (all levels)		✓						✓				✓
34. Examine alternative staffing arrangements in all delivery areas					✓	✓			✓			✓

- o increase involvement of business and other contributors; and
- o provide better staffing at all delivery points.

Clearly, structural changes in the Pennsylvania system are indicated in a number of studies.

Leadership

Another item of concern to the various groups inquiring into the improved delivery of vocational-technical education is the role of leadership. To what extent should vocational-technical education incorporate new voices into the formation of program and policy? How should they be integrated into the structure of program delivery? What is the actual interface of state authority and regional/local control? These questions, which confront every state, are of particular importance in Pennsylvania, given its tradition of progressive leadership, orientation toward local autonomy, and its changing occupational structure.

Specifically, the existing reports have identified several areas of needed change in the area of leadership in vocational-technical education. Among them are--

- o the improvement of state leadership;
- o the enhancement of business/industry/labor involvement; and
- o the improvement of the image of vocational-technical education.

In sum, new voices need to be heard in the state and existing voices need amplification.

Research, Planning, Evaluation, and Professional Development

The purpose of major alterations in the governance and leadership structures of vocational-technical education is to facilitate substantive change. Doing so requires the determination of the content-driven questions to be addressed and an approach to their implementation. This necessitates a long-range perspective and the ability to monitor change comprehensively in the dynamic area of vocational-technical education. Recent reports have noted these planning and evaluation needs in Pennsylvania. State educational leaders have been encouraged to--

- examine the reasons for underutilization of Area Vocational Technical Schools (AVTS);
- increase statewide, regional, and local planning; and
- evaluate the effects of the vocational-technical programs.

In addition, a concern has been expressed regarding the need for Pennsylvania educators to develop necessary skills for training students for the workplace of the future. Accordingly, the studies have mentioned the need to--

- improve the quality of technical assistance to the field and
- increase the amount and quality of professional development activities for educators.

According to these reports, research, planning, and professional development are required aspects of any statewide change in vocational-technical education.

Program Development

One aspect of vocational-technical education deserving of national attention is the tendency toward uneven distribution of programs within states. The types and quality of vocational-technical offerings may vary from region to region in a state, and various communities may have different perspectives regarding what is needed in course availability. This obviously limits the ability of student access to the great variety of programs potentially available, some which may be badly needed in a given region.

This tendency has been widely noted in Pennsylvania and reports have commented on it. In particular, decision makers have been urged to--

- examine the creation of a statewide system of technical institutes where community and technical colleges do not exist,
- encourage career guidance and improved job preparedness to enhance school-to-work mobility, and
- customize vocational-technical training for jobs that do currently exist in the labor market or will characterize the Pennsylvania economy of the future.

In general, the state is being encouraged to bring some standardization and consistency to what constitutes the fabric of vocational-technical education.

Curriculum

Ultimately, the expression of change in vocational-technical education occurs in curriculum. It is the means by which competencies are acquired and training methods are communicated. With

respect to curriculum, recent reports have suggested the following:

- Improvement of the secondary curriculum to facilitate school-to-work transition
- Enhancement of the curriculum to emphasize broadly-based entry level skills, such as the appropriate infusion of academic skills
- Coordination of career guidance and counseling functions in order to equip students to create career and educational plans for their schooling and their future

Curriculum is the point at which all change is implemented. It, then, is the key element in any reform.

The above categorization of issues serves several important functions for this report. First, it organizes, summarizes, and supports the work that has preceded it, amplifying its importance. Second, it provides a foundation for this inquiry, identifying the issues that merit study and the areas which must receive programmatic attention. Finally, and most important for the future of vocational-technical education in Pennsylvania, is its creation of a logical order for change across the Commonwealth. Order is important and this can be seen by examining the alternative. It has been stated previously that the critical element in program delivery is curriculum. It is therefore possible, at least theoretically, for change in vocational-technical education to focus reform efforts exclusively at the curriculum level. However, this would mean a failure to deal with some of the difficulties of program delivery at their root, introducing a high level of uncertainty as to whether any purely curricular level changes could be encouraged or sustained across the state for any length

of time. Further, the introduction of new approaches to the program in the context of anachronistic administrative structures introduces inefficiencies and would further undermine any attempted reform. Indeed, to do so would continue and reinforce problems about which the need for change has been consistently identified. Change outside of a comprehensive context may only serve to continue old problems and their consequent grievances.

Therefore, prudence requires that change be viewed in comprehensive terms. Curriculum change implies modification of program delivery. These modifications should be the result of research, planning, and professional development both within and without the state. Research and planning must facilitate the expression of new voices to complement the existing educational leadership, particularly the involvement of business and industry. New leadership must operate in a supportive and participative environment, one which provides adequate visibility to the reform efforts. The starting point for eventual curricular reform, then, is modification of the governing and administrative structure. With this as a beginning, change becomes a logical process, creating contexts which can be supported and sustained over time with adequate leadership and a progressive governing structure.

Within the framework discussed, effective reform in Pennsylvania's vocational-technical system must address the specific needs of its diverse populations, communities, and economic circumstances. As such, subsequent sections of this report will discuss these factors.

Social and Demographic Trends

Like the rest of the nation, Pennsylvania's population is changing. It is aging, its relative proportion of school-age youth declining, and the youth component more heavily minority than in the past, with one-third of all births being from minority families. The Commonwealth has over one-half million persons on welfare with more new cases on the rolls of Aid to Families with Dependent Children each month. Correspondingly, family changes are more frequent occurrences, with nearly half of all Pennsylvania marriages ending in divorce in 1986, disproportionately occurring in minority communities. Further, state and federal prisons in the state now contain over 15,000 youth and adults.

Nothing in these data is particularly unique to the Commonwealth. These trends are national problem and impact every state. However, they are having a dramatic impact upon the Pennsylvania system of vocational-technical education. From 1982-1987, overall vocational education enrollments were down 27.5 percent. However, enrollments for persons with disabilities were up 28.4 percent, disadvantaged populations increased 37.1 percent, and enrollments for limited-English speaking persons were up 1 percent. Minority enrollments increased 17.5 percent at the secondary level, 11.85 percent at postsecondary schools, and 8.6 percent in adult education programs. As a consequence of these data, special populations are and should be of a much greater concern to Pennsylvania educators than they have been in the past. As well, the aging of the population indicates that retraining in postsecondary institutions and adult education programs needs much greater emphasis.

These issues alone should dictate major changes in the focus of Pennsylvania's system of vocational-technical education. This is not, however, the entire story. One of the unique characteristics of the Commonwealth is its diversity. It is, simultaneously, among both the most urban of states and the most rural. Although it has only two very large urban centers, the state also has a number of medium sized cities, each with its own significant industrial bases. The vast majority of minority persons reside in these cities. At the same time, Pennsylvania has areas that are very rural in nature, historically agricultural, far from a large city and significant job training opportunities. As such, reform in vocational-technical education must address both the entry-level needs of urban minority youth and the retraining requirements of the rural agricultural worker in a changing economy.

Given the combination of highly urban and very rural areas of the state, the differential response of vocational-technical education has been generally appropriate. Its local and regional focus has made it possible to adapt course offerings to the service population, making it meaningful to local economies and labor markets. Such discrete labor markets, however, are largely characteristic of the past. Local economies were fed by traditional industry, mainly coal, steel, and agriculture. Pennsylvania was hit hard by the economic crises in all of these industries in the late 1970s and early 1980s. This has impacted the entire state, exacerbating the effects of the generally recessionary direction of the American economy during those years. All over the state, industries that had directly employed or provided

secondary employment for the local population for many generations ceased production, often permanently. People were out of work and, in many cases, had few transferable skills with which to combat joblessness. This placed tremendous strain on all state systems, vocational-technical education being one of them.

Since 1984, the job market in Pennsylvania has improved. Although the state unemployment rate has remained higher than the national average (about 8 percent of the work force), action through an aggressive economic development posture has led to a significant level of new-job creation. By the year 2000, it is anticipated that 550,000 new jobs will emerge. By and large, these will be the result of new technological change, small business expansion, and the growth of new industry. Jobs in these areas will require new types and levels of employment skills. By the same token, the future will also see the continued decline of jobs in traditional industries, some 230,000 job slots in the next 11 years. This constitutes a tremendous change in the occupational structure in a very short period of time.

The challenge for vocational-technical education is clear: As part of a highly dynamic world economy, change is occurring very rapidly. New jobs requiring different skills are emerging and traditional patterns of work in Pennsylvania are eroding. A regionally focused program no longer has the degree of relevance it once had. Instead, the need for a more uniform distribution of vocational-technical education services is far more important than it was in the past because both the urban and the rural student/worker must be equally well prepared for the future. Complicating

this process further is the fact that demographic realities in both Pennsylvania and the rest of the nation show that the work force of the future will be older, more heavily minority, and have a greater special needs quality. Vocational-technical education in the Commonwealth will have to be on the front lines of addressing these changes. If it is to do so, major changes in its entire service delivery system are needed.

Federal and State Legislative Trends

Federal and state law have been affecting Pennsylvania's public education and vocational-technical education in particular for at least 155 years. Since 1834, Pennsylvania has had laws that provide for free public education. In 1911, the Pennsylvania School Code added provisions that allowed for the establishment of education for employment in the high school, manual-training schools, vocational schools and domestic-science schools (Jones, 1976). This resulted in the separate identification of and legislation for vocational education in 1913. These events institutionalized the mandate and principle that all youth should receive training sufficient for profitable employment. These laws were followed by the Child Labor Act (1915) that both protected the welfare and health of the young, but also established continuation schools (1916) for those 14-16 year olds who had left school to enter the work force. This was followed by compulsory school attendance laws that still exist. It is clear that Pennsylvania had a great awareness of and appreciation for vocational-technical education well in advance of the rest of the nation.

After many attempts, federal legislation was enacted in 1917, called the Smith-Hughes Act. This legislation, which is still in force, provided permanent appropriations for training in agriculture, home economics, and trades and industrial education, providing teacher training in each field. Although it required a state investment, this law was the springboard for a national expansion of vocational-technical education, both in terms of content, location, and quality. This was followed by a number of federal laws, most notably the Carl D. Perkins Vocational Education Act of 1984, currently being reconsidered by the Congress for reauthorization.

The 1990s may provide much more diversified and expanded opportunities made possible by federal and state laws. At the federal level, the nation's economic condition, the increasing dropout problem, international competition, and the trend toward massive structural changes in the labor market are driving new laws and demands for attention. For example, the Congress will soon authorize over $1 billion for public vocational education. Recent employment legislation, such as JTPA, will be maintained and probably expanded. Several new laws concerning literacy, at-risk students, unwed mothers, work transition, runaway youth, and trade issues have been passed or are being considered, all of which will effect how Pennsylvania does business.

The vision of an improved and expanded vocational-technical educational system in Pennsylvania must therefore include a careful examination of how these laws and funding opportunities, blended with those of the state, formulate an articulated, quality controlled, and adequately financed system for all who need and

desire education for employment. This needs to be done at the highest policy levels to ensure that (1) federal funds do not completely determine the direction of state policy and (2) financial resources are used in the most economical and efficient way. Without such master planning, duplication will be created, portions of the population will be underserved, and program delivery will suffer.

Summary

Vocational-technical education in Pennsylvania faces challenges on many fronts. The state has a changing population, a rapidly shifting economic mosaic, and must respond to the realities of international competitiveness and scarce resources at the federal level. It must prepare a work force appropriate for the future in order to enhance the strength of the Commonwealth in the marketplace. To do this, substantive changes in the manner of its program delivery and a new vision of its future is recommended. The level of change needed must and should positively impact every aspect of the system of vocational-technical education, from state-level policy to the curriculum in the smallest rural high school. It must be coordinated between both the secondary and postsecondary system and include significant participation of the middle school system. Above all, it should provide students, both youth and adults, the capacity and the resources to carry out a career plan that will make them competitive in the marketplace of the 21st century.

Despite the magnitude of the transformation proposed, Pennsylvania is dealing from a position of strength. It has many positive qualities about its delivery system and they must be protected. Its regional focus, although changing with the times, should be, we believe, reinforced. Its recognition for excellence in the nation is well deserved and we propose its strengthening. Its prominence within the borders of the Commonwealth is important and what is recommended should further enhance its value.

We speak of reform in this report, not revolution. Indeed, part of the urgency of the call for progress is a subtle recognition of the viability of Pennsylvania's system of vocational-technical education. In the following sections, some of these strengths are detailed along with specific areas of concern. In the context of these issues and those developed in previous studies, recommendations will be selected among several alternatives with a discussion of why the study staff view the issue as we do. Beyond any particular recommendation, however, is our appreciation for the underlying strength of vocational-technical education in Pennsylvania and our confidence in its future.

STUDY METHODOLOGY

The Pennsylvania State Board of Education, through the Pennsylvania Department of Education, issued a competitive request for a proposal to conduct the study. The contract was awarded in mid-September 1988 with the study recommendations to be delivered in early March and the study final report in mid-May 1989. This was later revised to be due September 1, 1989. The project was monitored by staff of the Pennsylvania Department of Education and a special task force, including members of the Pennsylvania State Board of Education.

Study Objectives

The request for a proposal specified three major, interrelated objectives that the study was to accomplish. These objectives are as follows:

- To analyze the capability of the existing system(s) to deliver a comprehensive, articulated program of vocational-technical education to all clients in the Commonwealth of Pennsylvania
- To identify the problems that now exist within the current delivery system of vocational-technical education in the Commonwealth of Pennsylvania, including problems that may result from delivery, governance, curricula, facilities utilization, access, unserved needs, regulations, and financing
- To recommend a system or alternative system(s) to improve the delivery of comprehensive, articulated vocational-technical education in the Commonwealth of Pennsylvania

Study Procedures

A number of procedures were employed to assess the current status of vocational-technical education in Pennsylvania and then

to develop and refine recommendations for the system's improvement. Study staff reviewed documents specific to Pennsylvania as well as documents on subjects relevant to the study, examined systems in other states through on-site visits and telephone interviews, conducted a three-round policy Delphi, and utilized a review team of out-of-state experts to critique the clarity, desirability, and format of the recommendations. In addition, study staff kept the sponsor informed regarding progress and ideas under consideration as recommendations through the project director's attendance at monthly State Board of Education Project Task Force meetings.

Review of Existing Information

During the initial part of the study, staff gathered documents containing relevant prior studies of vocational-technical education in Pennsylvania. The review of previous studies included documents such as (1) A Study of the Governance of Local Programs of Vocational Education in Pennsylvania, (2) A Study to Assess the Impact of Competency-Based Vocational Education in Pennsylvania, (3) Vocational Professional Personnel Preparation in Pennsylvania: A Future Perspective, (4) 1988 Follow-Up Survey on Chapters 5 and 6 Impact on Area Vocational-Technical Schools and Selected School Districts, (5) Student Capacities in Pennsylvania's Area Vocational-Technical Schools, 1986-87, (6) Recommendations for Two-Year Goals and Objectives for Development of the 1988-90 State Vocational Education Plan (Blue Ribbon Advisory

Panel and Perkins Committee), (7) Special Populations Participation in Federally Funded Programs or Services (1986-87), (8) Status Report of Pennsylvania's Secondary Students with Disadvantages/Handicaps in Vocational Education, and (9) Status Report on Postsecondary Special Populations in Vocational Programs.

Study staff also conducted searches with state agency personnel for other studies, documents, and records thought to be relevant in determining the status of vocational-technical education in Pennsylvania. Specifically, information was sought and reviewed regarding the (1) quality and effectiveness of Pennsylvania's vocational education programs, (2) delivery systems, (3) governance, (4) curricula, (5) facilities utilization, (6) access, (7) unserved needs, (8) articulation, (9) regulations, and (10) finance.

The content of the studies, documents, and records were analyzed to identify program mission and goals, strengths, weaknesses, issues, and problems in the delivery of vocational education in Pennsylvania. In addition to documents that provided data about vocational-technical education in Pennsylvania, study staff reviewed 186 documents identified in a computerized literature search. These documents provided information and insights relevant to vocational-technical education.

Stakeholder Interviews

In addition to the information gained from the review of studies, documents, and reports, study staff members interviewed over 170 Pennsylvanians in focus groups or individually. The

interviews were with groups and individuals representing the following types of agencies or institutions:

- Area vocational-technical schools
- Branch campuses of colleges or universities
- Community colleges
- Businesses and industries
- Chambers of commerce
- Local boards of education
- Intermediate education units
- Local education agencies
- Private Industry Councils
- Professional associations
- Proprietary institutions
- Public comprehensive high schools
- State department of education
- State legislature
- Teacher centers and teacher education institutions

Twelve local sites within the Commonwealth were selected for visits by study staff. The interviews were with groups and individuals, such as--

- board members;
- administrators (secondary and postsecondary, including 4-year colleges and universities);
- vocational-technical educators;
- former and current students;
- advisory council members;
- school counselors;

- o teachers (other than vocational-technical);
- o employers;
- o chambers of commerce staff;
- o civic leaders; and
- o teacher educators.

The interviews were, in most situations, one to one (study staff member and interviewee). Interviewees were told that the information collected would be treated as confidential and reported in such a way that individuals could not be identified. Most interviews lasted approximately 45 minutes and were scheduled in advance by the study staff.

Key questions. The collection of information in the interviews; review of previous studies, documents, and records; and the focus groups were guided by the following set of questions:

- o What is the purpose of vocational-technical education?
- o Is the current vocational-technical education system in Pennsylvania accomplishing this purpose? What are its strengths and problems?
- o Describe the fundamental characteristics of the ideal way to prepare youth and adults for work in the year 2020?
- o In your opinion, what changes need to be made in Pennsylvania's vocational-technical education system to achieve the ideal system needs?

Other questions dealt with educational philosophy, governance, organizational structures and style, teacher characteristics, access, effectiveness and efficiency planning, funding, facilities and equipment, curriculum, student characteristics, rules and regulations, instructional processes, linkages, articulation,

professional personnel development, and community and labor market characteristics.

Review of Other States

The study staff examined the vocational-technical education systems in five other states to determine the applicability of these systems to Pennsylvania's. Two major categories were used to select the five states: (1) economic and demographic similarities and (2) delivery system dissimilarities. These data are included in Volume II of this report.

The states selected were Illinois, Michigan, Minnesota, New York, and Ohio. Of these five states, two were selected for site visits: Michigan and New York. Extensive telephone interviews were conducted with appropriate individuals in the remaining three states. In all five states, however, the intent was to examine the relationship between system structure and system effectiveness. This effort garnered many ideas with possible application in Pennsylvania, related to such factors as institutionalized methods for communication among service providers in a given service area, established planning processes with specified procedures for resolving differences among the parties involved, minimum overlap in the populations served by separate institutions, curriculum and program relevance, teacher certification, and finance.

To determine how well specific system elements from other states would work in Pennsylvania, the study staff analyzed the

steps that would be needed to implement these elements in Pennsylvania.

Policy Delphi

One of the processes used to help develop recommendations for this study was a modified policy Delphi. This method was selected because it--

- minimizes possible misunderstandings typically found in groups of individuals advocating alternatives for program improvement or for retaining the status quo; and
- avoids domination by one or several persons, pressure to conform to peer group opinion, personality conflicts, interpersonal hostility, and the difficulty of publicly opposing persons in positions of authority.

The modified policy Delphi consisted of two consecutive questionnaires and a group meeting. Over 400 open-ended questionnaires were mailed for the first round of the Delphi to individuals believed to be informed and concerned about vocational-technical education in Pennsylvania. (A list of types of organizations with which these individuals were affiliated, as well as the Delphi instruments and related materials, are contained in Volume II). Of the 407 questionnaires that were mailed, 151 were returned. Because disagreement or conflicting assessments between individuals is common when using this procedure, study staff used summary measures to not only express the group's coverage response but also to indicate the individual's agreement or disagreement with the items. These summary measures were used in the development of the second-round questionnaire.

The second-round questionnaire was mailed to all individuals who responded to the first instrument. On the second-round questionnaire, respondents were requested to rate a statement first as to its desirability and then as to its feasibility. Room for comments was provided for each statement so that respondents could share their rationale if they so desired. Fifty-nine second-round Delphi instruments were returned.

After the policy Delphi surveys were completed, individuals were invited to participate in a group policy Delphi meeting.

Thirty key individual participated in the group meeting. These individuals were selected based on the following criteria: representation of divergent points of view; geographical representation; significant organizational, institutional, and agency representation; and politically powerful group representation. Prior to this meeting, study staff developed tentative recommendations. The group of 30 key individuals who assembled for the Delphi meeting reacted to general questions; their responses then either confirmed or denied the validity of the tentative recommendations.

The policy Delphi was a major vehicle for generating alternative recommendations. Study staff combined the information from the Delphi with all other sources of information to generate recommendations believed to have the greatest potential for a positive impact on the Commonwealth of Pennsylvania's system of vocational-technical education and, most important, on her citizens.

Critique by Review Panel

A review panel of three members met with study staff to critique the proposed recommendations. The three individuals represented state directors of vocational-technical education, community colleges, and regional (multistate) educational organizations. Panel members were requested to examine the recommendations against the following criteria:

- Effectiveness. Has a valued outcome been achieved?
- Efficiency. How much effort was required to achieve a valued outcome?
- Adequacy. To what extent does the achievement of a valued outcome resolve the problem?
- Equity. Are costs and benefits distributed equitably among different groups?
- Responsiveness. Do policy outcomes satisfy the needs, preferences, or values of particular groups?
- Appropriateness. Are desired outcomes (objectives) actually worthy or valuable? Are they desirable for Pennsylvania?

Data Analysis

Study staff analyzed data from several sources to formulate the final set of recommendations: interviews, previous Pennsylvania studies, reports compiled by Pennsylvania officials, policy Delphi outcomes, information gathered from other states through site visits and telephone interviews, and documents identified through a computerized literature search. The References section lists all documents used to prepare the final recommendations and report.

Decision makers and policymakers need information that makes sense. The data analysis required assembling many discrete bits of information and, through the building of a chain of evidence, staff were able to arrive at conclusions that have a trail of logical relationships from initial to final data analysis.

Data from the review of previous studies, analyses of comparable state systems, individual interviews, focus group interviews, and the policy Delphi were combined by study staff. The technique used to analyze the data was that of pattern and theme finding. When separate and varied pieces of data are involved in a study, one of the most useful methods to use is to note recurring patterns and themes.

Given the diversity of the information available for data analysis, it is essential that procedures be used for ensuring the validity of findings. Two procedures were used to ensure the validity of the findings: triangulation and outlier checks.

Triangulation is essentially a process of double-checking findings and using multiple sources of evidence. In this study, triangulation was accomplished through the use of multiple interviews with a diverse set of stakeholders; the use of document/record reviews; the study of comparable state delivery systems; and the use of the policy Delphi.

Checking outliers involves giving careful scrutiny to those findings that seem to be outside the consensus. Although consensus findings represent the major portion of the data, findings outside this major stream were explored to ascertain if they were emerging trends or idiosyncrasies of data collection. This

analysis helped prevent selection bias and provided strength to the basic findings.

Study staff reviewed the patterns and themes that emerged from the data and identified and described the major issues and problems. Issues and problems were then prioritized in accordance with study staff's interpretation of their severity and significance in regard to effective and efficient delivery of vocational education programs. Data collection instruments and the data as analyzed are reported in detail in Volume II.

Develop Recommendations

Data on which the recommendations were based was developed from many sources. The interviews, policy Delphi surveys and group meetings, reports, studies, and state and national trends were all considered in determining the existence of a problem and proposing a solution or solutions to it.

The interviews were of primary use in determining the problems existing in the delivery of vocational-technical education in Pennsylvania. Although individuals might not agree on the solution to the problem or might view the problem from different perspectives, the fact that a situation was frequently mentioned by individuals in different roles was indicative that a problem existed that needed to be addressed. Confirmation of problems came from several sources, primarily state reports, testimony before the state legislature, controversial legislation, and previous state studies.

Solutions to the problems identified were more difficult. The policy Delphi, described in an earlier section, was a major means for generating alternative solutions. Project staff combined the information from the policy Delphi with all other sources of information to generate alternatives most likely to impact on the effectiveness of vocational-technical education in Pennsylvania. Care was taken to ensure that alternatives were developed that reflected each of the areas of major concern: delivery, governance, curricula, facilities, utilization, access, unserved, needs, articulation, regulations, and finance, among others. Emphasis was placed on developing alternatives for those problems and issues found to be pervasive and significant. The linkage between the interviews, the policy Delphi process, and the recommendations are explicit in Volume II of this study.

With the benefit of all information and opinions gathered, study staff prepared a final draft of recommendations. Each recommendation was assessed in terms of the following considerations:

- Extent of change in present system that would be needed
- Groups that would be affected
- Anticipated support or opposition from affected groups
- Political influence of affected group
- Anticipated costs of implementation
- Anticipated benefits if implemented

Although study staff recognized the opposition that some of the proposed recommendations would receive, the recommendations remained if study staff deemed the item to be (1) of great importance and (2) the best or only way to proceed.

State Board of Education Project Task Force

The study director met monthly with members of the State Board of Education Project Task Force to discuss project progress and to interact with Task Force members about tentative findings and emerging recommendations. The Task Force reviewed the final recommendations prior to their presentation to the State Board of Education in March 1989.

Interim and Final Reports

At the request of the State Board of Education, study staff agreed to prepare and submit an interim report containing the final set of recommendations to the State Board at the Board's meeting in March 1989. The interim report contained the recommendations only and not the supporting data that led to the recommendations. A draft report was delivered in mid-May 1989; the final report was delivered in September 1989.

A STRUCTURE FOR REFORM IN VOCATIONAL-TECHNICAL EDUCATION

The most critical dimension of this report has already been presented. Vocational-technical education in the Commonwealth of Pennsylvania requires a thorough reexamination that touches all aspects of the delivery system. Although the focus of attention is and must be the impact of change in support of the needs of individual students, it is the contention of the study that such changes cannot occur outside of a context of very deliberate, concerted action on the part of teachers, administrators, and policymakers. For reform to be useful and lasting, supporting structures and processes must be instituted, the lack of which will doom even the best intended approach. Indeed, to do so in Pennsylvania would be particularly tragic, not simply because it would be a missed opportunity for the Commonwealth and its people, but also because much of the nation looks to Pennsylvania for leadership in many areas, vocational-technical education being but one of them.

However, there are realities to which attention must be paid. A system of vocational-education is currently in place. Many are used to the system as it is, are comfortable within it, and favor its continuation. These individuals must be served in this study as are the advocates of reform. Additionally, students in the state are currently being educated, appropriately in many cases. Further, education in American society, as much as any other aspect of the nation's life, is a matter of politics. Accordingly, education has a plethora of interest groups, constituen-

cies, and loci of power. Recommendations about vocational-technical education, then, are never simply about what might be best within that highly specific domain. The manner in which they are heard and by whom must be considered. As well, a study of state-wide vocational-technical education cannot call for a set of reforms which make sense only on paper, as if a state were free to set its agenda apart from other factors. Neither Pennsylvania nor any other state can pretend that vocational-technical education can be planned and implemented in a vacuum, without accounting for its history, recognizing interested parties, and lacking the acknowledgement of other priorities which crowd the agendas of state governments. Hence, a set of recommendations which fail to take into account countervailing pressures are naive and inappropriate.

On the other hand, a serious study must recognize that recommendations responsive to pressure politics alone cannot be counted upon to deliver necessary reform of education. Change must be driven principally by a vision, an agenda designed to serve the ultimate beneficiaries --the students in Pennsylvania's schools. However, although reformers should take external factors into account, the long-range purposes of the program --not the short-range political consequences of a course of action --must predominate. This is, then, the basic orientation of the study.

THE LINKAGE OF REFORM

The question, then, becomes one of emphasis. As a matter of principle, the authors of this study will assume that the sponsor's interest does primarily concern the optimal delivery of vocational-technical education services. Previous studies have attempted to do the same and certain recommendations have been brought forward repeatedly. To the extent that those suggestions have been validated by the conditions in the state that the researchers of the Center on Education and Training for Employment have identified, they will be repeated. As the discussion of the methodology indicates, the specific recommendations are a direct consequence of the data, both those already existing as well as those collected for this study. What, then, will set this study apart from the others. First, there is a considerable advantage in the view of a disinterested third-party, a point clearly understood by the Pennsylvania education community in commissioning this report. Second, while this report will recommend some things that have been heard previously, many key points will be new, as will be the perspective taken in this study.

If one could separate the perspective of the report from its recommendations, it is the contention of the authors of this study that Pennsylvania would do far better to attend to the point-of-view advanced in the report rather than to accept every suggestion for reform. While it is true that, once the framework is understood, the recommendations flow quite logically from it, the crux of this report is that change in vocational-technical education

must be approached comprehensively. Any alteration at the structural level will have its consequences on curriculum. Likewise, curricular change must be supported by modification of structure. Without this understanding, the recommendations have no meaning. In this respect, the authors of the study take a position similar to the description of the Brookings Institution by John D. Steinbruner (1989): "We do not promote particular ideas or viewpoints . . . (Rather), we count on the innovativeness, care, and persuasiveness of our analysis rather than the force of recommendations. We try to make people see things differently rather than sell particular bottom-line conclusions."

The recommendations of this study, then, are based upon the data presented in the study and the expertise of scholars in vocational-technical and other fields of study. They have been seriously considered, challenged, reconsidered, and determined. They are, therefore, not to be taken lightly. However, more important than even these recommendations is the fact that it is the system of vocational-technical education that requires change, not simply individual elements within it.

RECOMMENDATIONS FOR A NEW APPROACH TO VOCATIONAL-TECHNICAL EDUCATION IN PENNSYLVANIA

Given this point of view, how can the call for comprehensive reform in vocational-technical education respond to all of the conditions to which it must heed? Does not the requirement of comprehensive educational action in a political atmosphere create a dilemma which cannot be resolved? We think not. The solution to the dilemma is a function of the state's approach to comprehensive planning. In examining the data collected from all parts of the state and a variety of "stakeholders" in vocational-technical education in the Commonwealth, three basic ideological thrusts could be identified. First, some individuals were clearly committed to the status quo and would change little --if anything. A few demanded far-reaching change in every area, from how vocational-technical education is delivered and whom it should serve to how it is administered and by whom. Without question, these constituencies are represented in the state's vocational-technical community. A far larger contingent, however, focused on measures producing moderate reform, preserving those features which serve the need and changing those things that failed to do so, but only to the extent necessary. While this group varied as to the identification of those elements of change, the study was able to identify a constituency of consensus while still having the alternatives offered by more extreme interests. From this tableau of choices, coupled with the insights of the study team, a viable set of recommendations was generated. The process of selection be-

tween alternatives and the choices in each area are summarized below.

Governance and Administration

The response of an overwhelming number of Pennsylvanians concerned a perceived need for change in the governance of vocational-technical education (see Volume II). In a response to open-ended questions, a relatively high number (46.4 percent) spontaneously identified local governance of vocational-technical education as being a problem. In general, the issues revolve around the visibility and image of the field, the appropriateness of its location in state government, and questions concerning the locus of power and decision-making, particularly centering around the distribution of authority in Harrisburg versus traditional control in the Pennsylvania's regions. Virtually all of these respondents acknowledge inefficiency, unclear bounds of authority, lack of communication, and duplication in the system. However, utilizing the three points-of-view emergent from talking to the people of Pennsylvania, a number of very different potential solutions suggest themselves. They range from the identification of vocational-technical education not only as a separate entity within education, but as in many large states, a state department apart from education, reporting directly to the governor, to restricting structural reform to the creation of a largely symbolic citizen advisory board made up of educators and representatives of business and industry.

Both alternatives have something to recommend them. An independent vocational-technical entity would have specific policy-making powers and would achieve the goal of improved visibility. However, the Commonwealth would gain these at a rather high (and, in the opinion of the study team, unnecessary) costs in terms of systemic upheaval and increased bureaucracy. On the other hand, "a blue-ribbon panel," by itself would ensure visibility and the appearance of action, but would have no specific policy-making responsibility. Both proposals ignore the uniquely regional flavor that has historically determined the nature of vocational-technical education in Pennsylvania. While it is true that regionalism does have some costs associated with it, it also offers strengths that should be preserved. Indeed, successful reform in Pennsylvania requires some combination of the improved visibility and efficiency that centralization affords with the autonomy and tradition of regional control. Accordingly, the study team concluded that the following combination of elements in the governance and administration of vocational-technical education in Pennsylvania are in order.

Recommendation 1:
Regional Governance

The Commonwealth should establish a regional administrative structure to govern vocational-technical education. The regional structure should encompass all planning and evaluation functions essential to delivering comprehensive and articulated vocational-technical education programs, services, and activities.

- The geographical area to be covered by a region and their numerical designation should be analogous to the intermediate units. While there are many intermediate units, they do constitute the organizational basis for much of the state system of education. As such, vocational-technical services can and should be aligned with them.

- Each region should be governed by a board elected at large by the eligible voters in the geographical area. The board should be known as Region (#) Vocational-Technical Education Board.

- The regional vocational-technical education board should select a regional superintendent for vocational-technical education who serves as the board's chief executive officer and provides leadership for vocational-technical education in the region.

- Each region should have an assistant superintendent for vocational-technical education with major responsibility for regional planning and evaluation of vocational-technical education.

- The regional superintendent and staff should be housed in a centrally located area vocational-technical school.

- Each region should have an advisory council composed of representatives of business, industry, labor, and community (consumer) representatives. The regional advisory council should work closely with the Regional Vocational-Technical Education Board and the region's vocational-technical education staff. The Regional Advisory Council should be used in program planning and evaluation efforts.

- Each region should have curriculum program councils rather than a separate council for each school program, i.e., there would be one council for drafting rather than one at each school offering drafting. These councils should interact with the regional staff and all teachers in that program area. Although the membership of these councils should be aware of program planning and evaluation activities specific to their program area, their major emphasis should concern the relevancy of the curriculum to current and future labor market needs. This recommendation should not, however, preclude or prohibit a local school or district from establishing program advisory boards in vocational-technical areas. Rather, it removes the necessity of their doing so and facilitates articulation.

- The Commonwealth should reconsider the funding formula and establish the regional board as the funding authority to reduce the tendency toward manipulation of student enrollment in order to maintain sending school funding levels.

- The regional vocational-technical education board should develop --with the collaboration of area vocational-technical education school directors, vocational-technical education faculty, business/industry personnel, labor leaders, community college personnel --comprehensive school personnel, and others as deemed appropriate, annual and 5-year plans for delivering vocational-technical education programs. This document shall be referred to as the Regional Vocational-Technical Education Plan. These plans should, at a minimum, be based on an assessment of the needs of individuals of all ages, employers, and the larger society. The regional plan should include--

  - an analysis of the regional needs;

  - the specification of programs, services, and activities essential to meet the identified needs;

  - the identification of the schools/colleges or agencies that will deliver the specific programs, services, and activities;

  - articulation and coordination agreements essential for vocational-technical education program delivery, including a formal relationship with local Private Industry Councils;

  - strategies for ensuring the integration of academic and vocational-technical education;

  - strategies for ensuring the linkage and relevance to vocational-technical education programs with business and industry;

  - strategies and procedures to be used in evaluating the effectiveness of the program; and

  - strategies for ensuring appropriate involvement of business and industry in planning and conducting vocational-technical education programs, including the determination of program relevance and the potential for sharing private-sector equipment, facilities, and personnel.

- As an inducement toward compliance, the Pennsylvania Department of Education should withhold state and federal funds for all education programs in a region until all involved educational institutions have engaged in the planning process and have officially accepted the Regional Vocational-Technical Education Plan. Alternatively, the Department could offer incentives, including a percentage over base funding for excellence in planning and in implementing the plan.

Clearly, this recommendation will preserve the regional character of the state's approach to education. The study staff consider that the improvement in articulation across educational levels would be considerable and would reduce the sense of competition for students between school units that was found in considerable evidence across the state. However, it would also introduce a new administrative structure, and unless corresponding changes were made in Harrisburg, this recommendation could exacerbate rather than resolve problems of communication and inefficiency. Consequently, this recommendation must be seen as linked to other changes in governance in order that the system as a whole can be improved.

Another question that would need to be resolved is how to pay for this new administrative structure. First, it is important to recognize that the costs would be relatively minimal. Existing facilities from the intermediate system structure could be made available to the vocational-technical enterprise. Secondly, the bulk of the staffing could be provided by the regional DOE offices (see recommendation #3), the intermediate units, and from participating schools in the region. If, however, there was a perceived need to establish a small but consistent funding base, how to do so would ultimately be up to the political leadership of Pennsylvania. The study staff suggest that several sources be investigated. First, the regions could be granted a limited taxing authority by the state. Alternatively, funds may be available as part of the legislation authorizing the structure. As well,

participating schools and localities could be assessed for funding. Finally, if this recommendation is accepted, funds may be available as part of the planning incentives previously discussed.

Even with some degree of increased costs, it is the opinion of the study staff that the regional character of Pennsylvania education is important to maintain. Yet, its maintenance depends on a functional structure of operation. We consider the proposed suggestion with regard to regional governance as an important part of this goal.

Recommendation 2:
Commissioner of Vocational-Technical Education

The position of chief administrator for vocational-technical education in the Pennsylvania Department of Education should be designated as Commissioner of Vocational-Technical Education. Under the direction and supervision of the Commissioner for Vocational-Technical Education, the State Department of Education should assume an assertive leadership role. This position would report directly to the Secretary of Education.

One of the most consistent themes observed by the study staff was the extent to which vocational-technical education has little visibility, impact, or control over its destiny. This, in the opinion of vocational educators, seriously impairs their ability to deliver quality programming. Further, 44.1 percent of the survey respondents spontaneously identified a problem with the status and role of the state director of vocational-technical education, and policy Delphi participants endorsed the idea of

elevating the position of the top vocational-technical administrator to that of a Commissioner co-equal with the Commissioners of Basic Education and Higher Education, by a wide margin.

Clearly, something needs to change in the governance and administration of vocational-technical education and it should impact on the top level of the system as well as the bottom. In this case, a clarification in regional management requires an equal change of the principal administration of vocational-technical education in the Commonwealth. While either of these changes could conceivably be implemented independent of one another, the study team felt strongly that both recommendations together would provide the strongest and most efficient structural arrangement.

Recommendation #3:
Regional Office Restructuring

The functions of the three regional offices (West, Central and East) should be refocused to more effectively serve the needs of Pennsylvania's regional educational system.

It was the initial feeling of the study team that the three existing regional offices should be closed. It was their observation that much of the function these offices served had become superfluous over the years, reduced, in the words of one employee, to "paper shuffling." As such, along with these offices having little true program responsibility, the study team proposed their elimination on efficiency grounds. While these facts still obtain, the study team also observed widespread disagreement with this suggestion on the part of the policy Delphi participants, indicating that points of access to state government other than

Harrisburg are highly valued around the state. Indeed, the team can envision a useful role for these offices if they are conceived of and structured somewhat differently than they currently exist. First, their principal value is that they are in in the field. As such, they can be best utilized as a resource from that frame of reference. Further, they should be given serious and on-going program responsibilities to make them truly effective, in addition to their present responsibilities.

Among a number of legitimate roles these offices could play are essentially functions that serve to link Harrisburg and the field. Given a strengthened regional foundation for vocational-technical education (Recommendation 1) and a top administrator with increased responsibility, the three regional offices can serve as the principal communications link between the state capital and the field, and also serve to monitor and give assistance to schools and regions in implementing programs. In addition, regional offices can be data collection points for the proposed expansion of Pennsylvania's educational database and research capacities (see Recommendation 8 and 11) and facilitate the work of other units of state government. Finally, the study team suggests an expanded role with respect to the state-wide Teacher Education Centers in helping to identify staff development needs and opportunities for teachers.

Summary: Governance and Administration

In the context proposed, the governance and administration of vocational-technical education in Pennsylvania can be greatly

improved. Implementation of the coordinated set of suggestions, the study team believes, will facilitate needed reform in other vocational-technical areas while also enhancing government productivity and efficiency. Governance and administration, therefore, holds the key to the efficacy of vocational-technical education in the Commonwealth and should receive the most serious attention by the people of Pennsylvania.

Leadership

Vocational-technical training, like other aspects of American education, is undergoing change in many different respects. One of these is that education can and must respond to new realities and new audiences. The concerns and interests of the American people cannot be limited to traditional elementary and secondary instruction. Increasingly, business and industry is demanding, and must be accorded, a voice in education. Likewise, adult retraining needs are emerging in the economy and special populations make up an ever larger percentage of the population to be served. How are these individuals to be incorporated and educational standards retained? As well, how can vocational-technical education be presented as a viable option, not merely a "dumping ground" reserved for those deemed less able to cope with "real" schooling? Part of the answer resides in strong leadership throughout the school system and a commitment to vocational-technical education by state government and the field.

Few in Pennsylvania dispute the value of leadership in vocational-technical education. However, as in the case of governance, there are discernable differences in how this leadership is expressed. Given the contrast of approaches previously noted, the following range of issues have been identified, among others, as options by the respondents:

Radical Systemic Change	Minimal Systemic Change
o An independent state board of V-T education	o Retention of joint board
o Business/Industry/Labor control of curriculum	o Greater infusion of B/I/L
o Elimination of general track, with greater resources for V-T	o Maintenance of existing educational options

The central focus of this study has been and will continue to be an emphasis on and an encouragement of better utilization of existing systems, changing structure only where necessary. Therefore, there is a decided tendency in this study toward the options regarding minimal systemic change. This is most clearly shown with issues of leadership. It is the position of the study team that there is little to "fix" with regard to leadership in vocational-technical education. Hence, minor alterations in structure would be entirely adequate to provide the context necessary to lead the Commonwealth in the 21st century.

With respect to leadership, then, it is the recommendation of the study team that the following adjustments be made.

Recommendation 4:
State Board Advocacy for Vocational-Technical Education

The State Board of Education should assume an active leadership posture and convey a commitment with regard to vocational-technical education. To this end, the study team suggests that the board should:

- review state governance and administrative structures to determine their effectiveness and efficiency in promoting vocational-technical education.
- clarify and communicate the role of vocational-technical education in all Commonwealth educational institutions.
- coordinate and cooperate with other state-level boards, commissions, etc., in promoting the interrelationship essential to quality vocational-technical education.
- hold meetings specifically devoted to developing a long-range statewide plan for vocational-technical education.
- establish an advisory committee to the Board specifically concerning vocational-technical education composed of vocational teachers and administrators, state legislators, business, industry, and labor leaders, and others. This committee would have no specific statutory responsibility, but would serve the Board to ensure that the material presented in vocational classrooms is relevant to current labor markets, technologically appropriate and up-to-date, and conducive to success for the student's future.

The State Board of Education is in a unique position to influence the attitudes and opinions of the people of the state and can readily use that power to beneficially impact vocational-technical education. It is the opinion of the study team that while several of these things are currently being done, an enhanced commitment in these areas is essential to the improved

visibility and functioning of vocational-technical education in Pennsylvania.

Recommendation 5:
Purpose and Scope of Vocational-Technical Education

The State Department of Education should develop and communicate a clear statement of purpose for vocational-technical education and embark upon the development of a long-range plan to guide it. The utility of these seemingly minor procedural steps cannot be underestimated. Indeed, they are the foundations of leadership.

The purpose and its dissemination should include several different features. Generated with input from local educators and the business/industry/labor communities, the Board could then proceed to communicate the statement of purpose to all relevant educational publics within the Commonwealth. The nature of this statement would drive the development of a long-range plan.

The long-range plan should include for ensuring that students in vocational-technical education are being taught appropriately, that their facilities and equipment are as up-to-date as possible and are being optimally utilized. In addition, the plan should provide the following:

- Maintenance of an up-to-date inventory of facilities and equipment being utilized across the state
- Development of mechanisms for equalizing great facilities inequalities across schools, districts and regions, such as sharing them where possible
- Development and facilitation of relationships between institutions and private sector entities for the purpose of curriculum and facilities inputs into local schools

- Planning for the replacement of obsolete equipment and facilities, including plans for additional state funding for those schools, districts, or regions with limited capacity for self-reliance in this area

Recommendation 6:
Business/Industry/Labor Relationships

Beyond planning and advisory emphases, the Pennsylvania Department of Education should actively promote the establishment of strong relationships between vocational-technical education, business, industry, and labor. Study staff suggest that these relationship include--

- the potential for sharing private-sector facilities, equipment, and personnel;
- the involvement of business, industry, and labor personnel in the identification of labor-market demand, the identification of competencies needed by workers, the validation of curricula for its relevance to labor market needs, assistance in strategic planning, and advocacy with key groups; and
- the use of business and industry sites for helping vocational-technical education personnel maintain up-to-date job knowledge and skills.

Recommendation 7:
Public Information

The State Department of Education should develop a statewide public information campaign to inform all segments of the population concerning the linkages between effective vocational-technical education programs and the overall success of the Commonwealth's economic development initiatives. This effort should highlight vocational-technical education's role in preparing an enlightened (i.e., educated) labor force with broad, transferable skills as well as job specific competencies.

Summary: Leadership

Little involving leadership is, by itself, revolutionary in nature. It ultimately becomes a matter of setting a clear course and communicating it to an audience that needs to know what it is. Pennsylvania has no lack of individuals capable of providing such leadership. It has sufficient persons interested in education. The Commonwealth needs, however, to utilize those resources in a way most productive for vocational-technical education. It is the contention of the study staff that a few simple modification in the manner in which those leaders are arranged and the degree of their unity is all that is required to meet this important need in the Commonwealth.

Research, Planning, Evaluation, and Professional Development

As noted previously, transformation in either structure or curriculum is, by itself, inadequate to impact the delivery of educational services. Both must be present in order to create and facilitate change. However, merely declaring them as policy has no practical utility. Indeed, some mediating facility must be present, whereby policy can be communicated to and implemented in the field and through which reality in the field can impact policy. It is the contention of the study staff that such a mechanism that can serve the Commonwealth's needs in this regard are enhanced emphases in research, planning, evaluation, and professional development. Further, many existing entities can be utilized to maximize both the impact of improvement and the efficiency with

which it can be delivered. Activity in these areas will also respond to the need of the state that some regard as not sufficiently coordinated, focused, or funded.

The importance of these factors are readily identifiable in the data. Nearly one-quarter of the survey respondents spontaneously identified these areas as problems within the Commonwealth. In addition, certain proposed changes were considered by policy Delphi participants as being among the most necessary and feasible of any individual area. Therefore, the study staff believes that this area may be of great value to the state in terms of useful activities in general and will be necessary in coordinating the nature of the changes proposed in this report.

Recommendation 8:
Enhanced Research Capacity

The Pennsylvania Department of Education should systematically expand the conduct of research and development activities, including leadership development, through the the stable funding of such through the existing university-level Teacher Education Centers. These vocational teacher education centers should be responsible for the execution of research activities that will benefit vocational-technical education in the Commonwealth. More specifically, study staff suggest that the Centers should conduct research and development activities concerning the following:

- Policy analysis. The Centers should identify policy alternatives for vocational-technical education in Pennsylvania, conduct research on the feasibility of these alternatives, and provide policymakers with a prioritized set of recommendations.

- Future program directions. The Centers should identify creative and innovative strategies and procedures for

delivering vocational-technical education. The most promising strategies and procedures should be disseminated to appropriate audiences through a wide range of activities, including demonstration sites.

- Curriculum development. The Centers should coordinate the Commonwealth's vocational-technical education curriculum development efforts, including the identification, development, and validation of competencies; the development, in concert with vocational-technical faculty, of curriculum materials and instructional strategies, disseminate, in concert with the Academy, the materials and strategies, and the evaluation of the effectiveness of the materials and strategies developed.

- Long-range program planning. The Centers, with the active involvement of state and local personnel and other appropriate individuals, should develop a 10-year plan for Pennsylvania's vocational-technical education program. This strategic, statewide plan should provide the basis for the Commonwealth's vocational-technical education programs, services, activities, and resource allocations. The long-range plan should reflect the Commonwealth's statewide emphasis on economic development and the key role vocational-technical education plays in developing human resources.

- Program evaluation. The Centers should develop and maintain a comprehensive evaluation system that will provide consistent information about the effectiveness and efficiency of all vocational-technical education programs, services, and activities at the elementary, middle/junior high, senior high, postsecondary (institutes, community colleges, 4-year college, university), and adult levels. The evaluation system should provide the information needed for federal reporting, state planning, regional planning, local planning, public accountability, and marketing.

- Program coordination and articulation. The Centers should identify and disseminate information about innovative practices for use in program coordination and articulation.

- Professional personnel development. The Centers should develop creative approaches, conduct experiments, and evaluate the effectiveness and efficiency of conducting innovative professional personnel development activities. The Centers should also conduct professional needs assessment, design and plan programs and activities to meet professional development needs, and coordinate the delivery of the professional development programs, services, and activities. The Centers should, as necessary, involve those individuals or institutions best able to provide the

expertise needed to ensure high quality, professional, meaningful programs, services, and activities.

- o Dissemination. The Centers should design and conduct a number of research and development dissemination activities targeted at significant audiences. If the Regional Offices do remain open, then the dissemination and utilization function would be a meaningful task they could coordinate and/or carry out.

The division of responsibility for the functions listed above should be made with consideration for the unique capabilities of each Teacher Education Center, the exception of inservice/professional development. This function should be carried out at each Center as a generic component of teacher education. The activities should incorporate the expertise of not only education professionals, but also professionals from other disciplines, as appropriate. This would take advantage of their locations at the state's major universities. The mission of the Centers will benefit from the capacity that each host institution offers. The host institutions will also benefit from the presence of each Center. As a consequence, host universities should be willing to provide appropriate facilities and equipment for housing the Centers. Administratively, staff suggest that the Centers should:

- o be responsible to the Commonwealth's Commissioner for Vocational-Technical Education;
- o have a Center advisory board that would include university researchers and vocational-technical faculty, representatives of stakeholder groups (such as AVTSs, sending high schools, community colleges, technical institutes, high-technology centers, business, industry, and labor);
- o have a stable funding base that will allow them to carry out the mission with which they are charged and encourage their host universities to (1) view them as entities to which the Commonwealth is committed and (2) share in funding responsibility;

- obtain staff members from appropriate disciplines within the host university; from various state government agencies (selected staff might have joint appointments with Centers and their home state agencies); and from the education, policy, planning, evaluation, and research communities within Pennsylvania and across the country. Under the circumstances, it would be reasonable to offer key staff tenure accruing appointments at the host institution;

- each have a director whose appointment would be made by the respective host university in agreement with the Commonwealth's Commissioner of Vocational-Technical Education; and

- conduct research and development activities designated by the Commissioner and other studies identified by the staff of each Center with the input of the Center Advisory Board.

Recommendation 9:
Enhance Teacher Professionalism

All vocational education instructors at the secondary level deserve to have significant professional inservice opportunities available and should be encouraged to obtain an appropriate baccalaureate degree. Of no lesser importance is the need to provide teachers in academic areas with opportunities to develop in areas having occupational relevancy. Teacher Education Centers have a major opportunity to serve the Commonwealth in these capacities and it is the opinion of the study staff that these facilities can and should be utilized in both formal and less formal ways to encourage teacher professionalism.

Without a doubt, it would be useful for teachers in vocational-technical areas to have baccalaureate degrees. This should certainly be a goal for individual instructors and they should receive ample financial support, incentives, and encouragement from their school system and the state in so doing. Formalized degree-oriented training, encompassing pedagogical preparation and a broad liberal arts emphasis, offers important opportunities for skill development. However, the study team recognizes the need, particularly in vocational-technical areas, for infusions of professional trades and skills that may not be available from the pool of graduates from colleges of education.

The study team suggests that, insofar as the educational realities provide for a mix of both academically and professionally trained instructors, a system of inservice opportunities be made available to instructors to assist them in enhancing their skill levels, regardless of whether their need is pedagogical or technical. Teachers in academic areas also should have the opportunity to pursue inservices which allow them to appreciate the occupational relevance of their courses.

The crux of this recommendation is that the instrumental outcome of these inservices would be specific to the needs of the individual. Focusing on the case of the vocational instructor without a baccalaureate degree, these inservices should provide credit toward one. While the study team finds a mix of skills within a given faculty to be helpful, the Commonwealth should provide attractive incentives for a teacher to continue with

her/his professional development, of which the acquisition of a baccalaureate degree is one.

Recommendation 10:
Accreditation of AVTS

All area vocational-technical schools should receive accreditation by an agency officially recognized by the U.S. Department of Education. While not strongly addressed by response to open-ended questions and though seemingly a small problem and simple to rectify, this less than drastic change can provide substantial benefits for the students in vocational-technical areas, and thus bring to the field a solid foundation with which to base its claims of viability as an educational option.

It is proposed that the technical institutes suggested in this study be accredited as soon as it is possible. Study staff suggest that the Pennsylvania Department of Education facilitate an accreditation team consisting of individuals from the Teacher Education Centers; business, industry, and labor; and the proposed regional leadership of vocational-technical education. Such a team would provide the substantive and technical expertise with which to support local schools in the accreditation process.

Recommendation 11:
Compatible Database

The Commissioner of Vocational-Technical Education should cooperate with other Pennsylvania state departments and agencies to create a compatible database for up-to-date labor market, job availability, and related information to be used by all. At a minimum, these departments should include Education, Commerce,

Labor and Industry, Public Welfare, and Community Affairs. Although the data should be compiled centrally, the role of the Regional Offices should be examined in relationship to the collection and dissemination of such data as a service to the schools in the areas they serve and also to assist the Centers in their research and development efforts. The issue of a compatible database, principally identified by state-level staff, would be of unquestionable value for administrative services. However, it also clearly would have utility at the local level and facilitate planning and program linkage with other agencies and with the private sector. Again while straightforward and relatively easy to implement, it is one area in which the Commonwealth could realize significant gain for a minor expenditure.

Summary: Research, Planning, Evaluation, and Professional Development

The need for research, planning, and professional development cannot be overstated. Without these three components, vocational-technical education in Pennsylvania--or any other state--cannot maintain its ability to appropriately prepare individuals for the future.

Program Development

The Commonwealth of Pennsylvania has extensive vocational-technical offerings at the secondary level. In some geographic areas of the state, however, adequate postsecondary and adult

offerings are not available. That these gaps in educational service delivery exist is generally recognized; it is obvious to the observer and was often expressed by Pennsylvania educators. It sparked the spontaneous recognition of over thirty-two percent of the survey sample. It also was a definite constituent element driving the decision to seek this report.

What to do is less clearly defined. Without question, one of the more divisive issues examined by the research team is the exploration of alternatives for meeting these needs. Insofar as the issue, in terms of the state of Pennsylvania and its institutions, is at the borders of the secondary and postsecondary systems, "turf" disputes are inevitable and apparent in the data. The alternatives considered by the study team were wide ranging. An expansion of the high technology center system was considered as was the development of new community colleges in underserved areas. Both of these alternatives were considered to have drawbacks. Certainly, new community colleges would require a substantial capital investment. New colleges in these rather remote areas would also tend to be low in enrollment, one of the principal reasons for which colleges do not exist in these areas today. High technology centers would even further exacerbate the drain on resources, being both expensive and tending toward such specialization as to fail to meet the need for basic services in outlying communities. Further, only 5% of survey respondents identified access to high technology education as a problem.

In responding to this issue, the study team considered requiring new funds for the establishment of either high technology

centers or new community colleges in order to permit greater access of underserved populations to be cost ineffective. Rather, existing resources should be utilized as much as possible to provide some degree of postsecondary education. As such, the choice was made to go with an enhanced version of the AVTS centers. That is, in areas in which no publicly supported postsecondary vocational training is available, the problem can best be handled by providing it according to the local need by capacitating local facilities and institutions to handle it. Further details of this proposal are explored in the following recommendation.

Recommendation 12:
Technical Institutes

In those parts of the state not currently served by community colleges or branch campuses, area vocational-technical schools (AVTSs) should be eligible for designation as technical institutes. Study staff suggest that these institutes be recommended for this status by the regional vocational-technical education board, which is described in recommendation 1, subject to approval by the Pennsylvania State Board of Education. Study staff further recommend that AVTSs so designated--

- be accredited by an agency recognized by the U.S. Department of Education;
- offer adult training and retraining programs of both short- and long-term duration;
- receive funding from the state based on the same formula as used to reimburse community colleges for the education/training of adults;
- be governed by the regional vocational-technical education board, with designated and mutually agreed upon representation by appropriate state community college personnel

(This approach would be consistent across such areas except where contiguous vocational-technical education regions exist that are not served by community colleges. These regions may wish to join together to organize a technical institute.);

- o give preference to employing faculty who have earned at least a baccalaureate degree, unless necessity requires particular skills for which degreed teachers may not be available;
- o facilitate articulation with community colleges for the benefit of those students who wish an associate degree;
- o enter into articulation agreements with a community college(s) to provide related academic subjects at the technical institute campus, with the technical institute providing the community college(s) with various specialized training opportunities;
- o provide placement and counseling services, either directly or indirectly through coordination with another institute or agency; and
- o coordinate with the Teacher Education Centers for curriculum development, as well as other appropriate services.

The study team is aware that opposition exists to this recommendation. In the data, policy Delphi participants were quite clear in their rejection of AVTSs being used for adult and postsecondary purposes rather than secondary vocational education. The study team is also aware that opposition is expressed no matter what alternative is posed. This recommendation is not designed to replace the secondary services provide by AVTSs, nor is it intended to usurp the "turf" of postsecondary institutions. Rather, the combination of secondary and postsecondary offerings on the same campus appears to be a reasonable, financially feasible alternative and would not run counter to the spirit of participant response.

Indeed, participants were quite clear that adult education services were very much needed, with over 85 percent of the identifying this as an area of concern. In terms of the funding formula, there was some opposition, but most who responded concurred on its appropriate response. Likewise, significant opposition was found with regard to designating all AVTS' as technical institutes. However, the study team makes no such recommendation. Instead, the people of the Commonwealth should look at the need and consider the availability of resources. Under these circumstances utilizing the AVTSs in underserved areas in a new role makes the greatest sense of the available alternatives.

Summary: Program Development

The study team recognizes that the postsecondary needs of all Pennsylvanians must be served, irrespective of geographic location. Although some may consider it preferable to have a separate facility and duplicated services, Pennsylvania should have some consideration for feasibility and efficiency. The lack of an adequate tax base in remote areas and the prospect of an enrollment too low to justify a separate comprehensive facility requires an analysis of existing resources. This recommendation addreeses these concerns. In addition, it offers both articulation with local secondary vocational programs and provides a context in which cooperative relationships between the secondary and postsecondary communities may take place.

Curriculum

As previously argued, the ultimate expression of educational reform occurs in curriculum. While a relatively few survey respondents (8.4 percent) specifically identified some aspect of curriculum as being a major problem, a focus on virtually any other problem must finally develop into reform in the classroom if it is to have the intended effects. As such, the study team took great care in preparing its recommendations relative to curriculum, recognizing that it must encapsulate the preceding changes suggested as well as validate them on the applied level. In reviewing what was needed in the state of Pennsylvania, the data were quite clear. The participants definitely believed that vocational technical education was appropriate in secondary education, with 81 percent rejecting the notion that it should be the exclusive province of the postsecondary level. In addition, a large number of survey respondents (over 35 percent in open-ended questions) noted a substantial lack of student awareness of educational and career options. A proposal for a career awareness course received unanimous support from policy Delphi participants, most unusual for a group as diverse as this. Further, the introduction of vocational-technical studies at grades 9 and 10 were endorsed by the vast majority of respondents. Involvement in occupational cluster curricula and exploratory programs were favored by as much as 90 percent of those who commented.

Curriculum reform at grades 11 and 12 were favored as well. Changes were suggested indicating that transferable skills, critical thinking skills, competency-based program requirements, and the integration of academic skills into vocational programming was widely favored. The study team concurs. Its observations, coupled with the broad-based sentiment shown in the data, can be summarized in the following curriculum areas.

The implications of these recommendations are, in many ways, obvious. Their implementation will create a new vocational-technical agenda for Pennsylvania. They cannot help but impact every aspect of the system. Their principal effects, however, will be in calling upon the leadership of Pennsylvania to make a commitment to the field and the many thousands of students in the Commonwealth whose careers and destinies will be forever changed.

Recommendation 13:
Vocational-Technical Education
in Grades 8, 9, and 10

Students should receive instruction in systems of technology, human relations, problem solving, decision making, and career selection and development in grades 8, 9, and 10, respectively. These courses and the specific topics to be included should be mandated by Pennsylvania State Board of Education, with curriculum development/adaptation being done by the most appropriate state university Teacher Education Center defined by recommendation 8. Suggested topics are as follows:

- The systems of technology course would acquaint students with the systems and subsystems in technology, how technology affects people and the environment, how to use technology to solve problems, how to control technological systems, and how technology may affect society in the

future. Content should integrate theory with hands-on activities to solve problems. To address such topics adequately would require two semesters of classes that meet one period per day. It is feasible to provide a Teacher Education Center to prepare current industrial arts teachers to teach this course; they possess the hands-on skills and understanding of technology needed to provide a course that is both theory and practice. Colleges and universities in Pennsylvania that currently prepare industrial arts teachers, however, may wish to rethink/revise the preparation of these teachers for the long term.

- Human relations and decision making would deal with the processes of decision making, problem solving, and resource management; understanding self and others, including how to get along with parents, siblings, and fellow students; and living skills. To address these topics adequately would require, at minimum, one and one-half semesters of classes that meet one period per day. It is feasible to provide professional development programs through a Teacher Education Center to help currently employed home economics teachers to teach this course; they possess the skills and understanding necessary to provide a course that includes theory and practice. Colleges and universities in Pennsylvania that currently prepare home economics teachers, however, may wish to rethink/revise the preparation of these teachers for the future.

- The career selection and development course would be designed to serve all students and help them assess their interests and abilities in the context of career clusters. This course would acquaint students with the realities of the world of work--what employers expect in the way of cognitive, psychomotor, and affective skills--as well as career ladders and the opportunity for lifelong learning. An overview of each of the clusters would be presented, and students would select two to three clusters to explore more fully, including shadowing people in prospective careers. At the end of the year, each student would meet with the guidance counselor to update the individualized education program that will guide the student in obtaining the education needed to reach the goal desired.

Recommendation 14:
Vocational-Technical Education in Grades 11 and 12

Grades 11 and 12 should provide to students the opportunity to develop specific skills in a cluster or area within a cluster.

Attainment of competencies rather than the number of hours of instruction should be the criteria used to determine completion of a program. Learner completion of an activity should be determined by the individual's ability to perform satisfactorily the cognitive, affective, and/or psychomotor attributes essential for progression to the next level of learning or for satisfactory performance in a work setting.

Grade 12 may be a continuation of grade 11, or, if the student is ready, involve articulation with the closest community college or technical institute, as appropriate, or an apprenticeship program.

The related academic skills should be taught with as much rigor as individual student capability will allow. In addition, vocational-technical faculty should include instruction regarding the application of academic skills, either directly or indirectly via coordination with the appropriate academic teacher. Vocational-technical courses should be competency-based and should deal with the cognitive, affective, and psychomotor domains related to the occupation. Pennsylvania's Teacher Education Centers could develop curriculum for adoption or adaptation in local schools.

Recommendation 15:
Interdisciplinary Curriculum

An interdisciplinary curriculum should be implemented that encourages the integration of academic education and vocational-technical education. Wherever possible, academic and vocational-

technical teachers need to relate the teaching-learning experiences that students encounter concerning reading, writing, oral communications, and mathematics skills with the application of these skills in work-related settings. Relating the academic and vocational-technical teaching/learning experience will require coordination by teachers for curriculum planning and sequencing. Special efforts will be required to identify the teaching/learning instances where the relationships between theory and practice can be shown, thereby strengthening the relevance of the learning experience for all students. Educational planners for these activities should consider incorporation of team teaching, identification of core skills, and expanding hands-on learning experiences for all students.

Recommendation 16:
Student Educational Development Plan

Guidance counselors in all school districts should, with the participation of each student and parent(s) or legal guardian(s), construct and implement and educational development plan, beginning no later than grade 8, with a yearly review and update, including the opportunity for major alterations after the student has completed the career selection and development course. Each plan should include the postsecondary education opportunities appropriate to the career goal(s) each student desires to attain. Counselors should help students select vocational-technical and academic courses that are congruent with their immediate and long-term needs, their aptitudes, their interests, and their abilities

so that all students are given the opportunity to work up to capacity.

Summary: Curriculum

These recommendations provide a basis for the stated goal that all Pennsylvania students receive equal access to the best possible education. This series of curriculum reforms, addressing, presumably, vocational-technical education, actually recognizes the distinction between "academic" and "technical" studies as an artificial one. Thus is a genuine reflection of the expectations students will find in the labor market and is indeed the principal reason Pennsylvania and all other states are experiencing greater interest in and concern about adult education. If it is desired that vocational-technical curricula be improved, the clear direction for such improvement resides in the integration of these two formerly differentiated "tracks". All Pennsylvania students need and deserve to know the options for careers that exist, as well as how to apply knowledge. These curriculum recommendations would assist students in meeting these objectives.

SUMMARY: A NEW AGENDA FOR VOCATIONAL-TECHNICAL EDUCATION IN PENNSYLVANIA

This report has provided a comprehensive examination of vocational-technical education in Pennsylvania and has created a coordinated set of recommendations with which to address the diversity of the Commonwealth. This is not the first nor will it be the last study that deals with vocational-technical education in the state if vocational-technical education is to remain a viable part of the educational enterprise. Some of the findings and recommendations presented in this report are new. Others have been noted on previous studies.

This report presents a series of recommendations, provides evidence for them, and establishes a structure to facilitate their implementation. Individual recommendations, if implemented alone, will not have the impact needed to affect vocational-technical education in Pennsylvania to the degree needed. The recommendations are interrelated and, taken as a whole, have an impact that is greater than the sum of their parts.

The substance and implications of the proposed recommendations call for all segments of education and government, as well as the full partnership of industry and business, to support and provide leadership for reform and action. It will require energetic, progressive, dedicated and, at times, selfless involvement. Contribution and endorsement will be needed from parents, teachers, and school boards; from AVTSs, colleges, and universities; from local, county, regional, and state officials; professional

education organizations; from industrial and labor councils; and from students themselves.

Essentially, these recommendations are directed toward improving the responsiveness, efficiency, and effectiveness of the system of vocational-technical education. They are designed to enhance the ability of Pennsylvanians to work, live, and participate fully in society.

To attain this goal, both the curriculum and the system of program delivery must be modified. And, to ensure continued effectiveness, research and development activities must occur to constantly check and recheck the effectiveness and validity of the curriculum and system of program delivery. The contributions that business, industry, and labor can make to the planning of educational programs must not be overlooked. This calls for broad partnerships between educators and employers on an ongoing basis. Such operational partnerships will result from improved and expanded vocational-technical education planning at the state, regional, and local levels. Public and private planning collaboration will better ensure that future instructional facilities, equipment, and curriculum reflect employment needs in the future.

Concurrent to curriculum and classroom improvements is the need to better prepare staff to deliver the new curriculum. The teachers, counselors, and administrators of tomorrow must know the requirements and operation of the labor market, be competent in effective application of this information, and be held accountable for its effect upon students. This will demand changes in teacher preparation programs, credentialing requirements, methods of

program accreditation, and instructional and leadership processes.

Equality and efficiency of program access is important as well. Improved coordination of programs and equal access to publicly supported education--both secondary and postsecondary--is vital. Improved use of existing facilities is strongly recommended. As well, middle school students need to be exposed to the nature, benefits, and opportunities inherent in vocational-technical education. Requirements for structured career and educational plans on the part of each student should be delivered through structured exposure to decision making, career planning, skill development, and the range of program options available to them and benefits of participation. Further, an examination should occur regarding the requirements, hours, course sequence, etc., needed to demonstrate competency or program completion. The demands of the new labor market might well require an updated formula for student competence certification.

Clearly, the report addresses the substance of needed improvement in all these areas. However, the study also makes clear the linkage between these reforms and those concerning the image, governance, structure, and leadership of vocational-technical education. Vocational-technical education must be an equal partner in policy and decision making with other facets of education at the highest administrative levels. This will call for streamlining the governance structure, establishing more visible leadership at the state level, and empowering the regions to better address their own needs and capacities. Ultimately, this study makes clear that if long-lasting educational reform at the local

level is desired, a no less comprehensive reform is needed in the governance and leadership of education than in other areas. To think otherwise is either naive or indicative of a highly self-interested view of the need for reform. This report offers recommendations to effect these changes.

Historically, Pennsylvania has assisted individuals exercise economic and social control over their lives through its commitment to education. As such, vocational-technical education has been regarded as having significant potential as a major contributor in building and maintaining a vibrant, dynamic future for the people of the Commonwealth. We contend that this position is even more true today. As the state enters the 21st century, it must do so with a resurgent commitment to education and the realization that the articulated delivery of vocational-technical and academic education, while not a simple or convenient undertaking, is a necessary one. Change is rarely easy, especially when it involves all segments of society. Therefore, it is especially important to recognize that attempts at reform cause controversy. Hence, controversy is a reasonably good indicator that the correct issues are being raised. As a result, meaningful and coherent change is possible. The alternative is to attempt to avoid change in order to avoid controversy. Problems will continue to fester and grievances will mount, for no action will have been taken to remediate them. And important opportunities will be lost. This will compound the difficulties of the future with tragic results.

We propose an alternative scenario. We suggest that the dynamic changes taking place in the workplace be decisively met

with equally dynamic actions by the education community. We further propose that these actions be institutionalized by the establishment of a complementary structure capable of reinforcing that change. Finally, we argue that vocational-technical education in the Commonwealth of Pennsylvania should be accorded as much institutional respect as it has importance to the state and its people. Again, less comprehensive solutions are available. However, it is our utmost hope that the evidence from the study be carefully considered for it expresses the voice of many in Pennsylvania's educational community.

Although problems exist in the vocational-technical education system, there are many strengths as well. The study team has taken special care to emphasize those strengths as well as the problems to be solved. It is on these strengths that Pennsylvanians have come to rely. It is now time for them to build upon them, for the risks of the future are exceeded only its opportunities.

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